Bacteriological Diagnosis

ST. GEORGE REID

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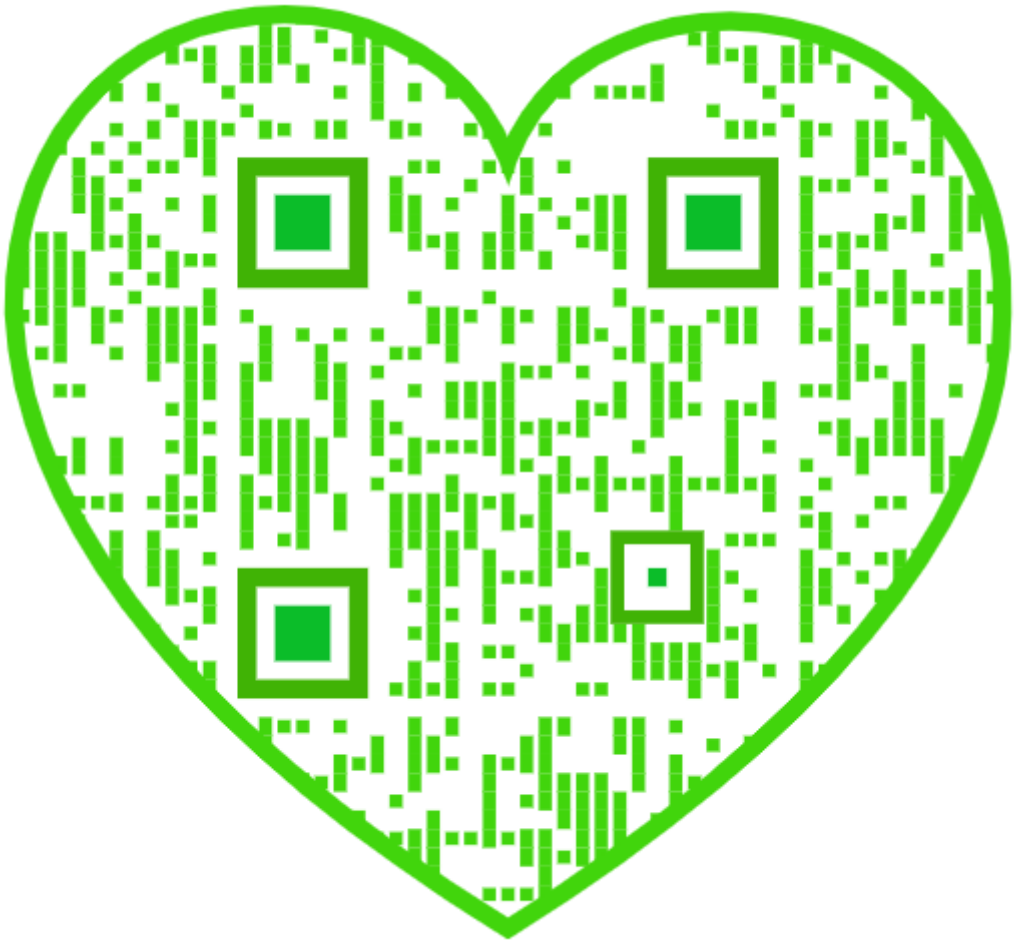

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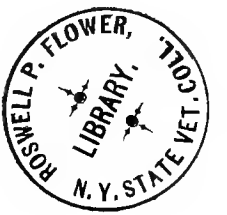
BACTERIOLOGICAL DIAGNOSIS.

BY

ST. GEORGE REID,

BACTERIOLOGIST TO THE CENTRAL LONDON THROAT AND EAR HOSPITAL.



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No 11

PREFACE.

THESE notes are intended merely as an analytical key to bacteriological diagnosis, the object being to secure, as far as possible, a differentiation at once rapid, accurate, and simple. The tables were originally drawn up for my own assistance in differentiating the mouth and throat organisms, and finding them of very material aid, the plan was extended so as to embrace most of the known bacteria, and the notes are now published, in the hope that they may be of service to other workers. As it is not the purpose of this pamphlet to deal with matter already fully treated of in text-books of Bacteriology, all details of stains and such questions of technique are, with two exceptions, omitted. The method of procedure has been to inoculate two tubes, one of gelatine and one of agar or blood-serum, so that the special characteristics of the organism at the ordinary temperature and at 37° C. might be developed as rapidly as possible. For the description of the organisms I am indebted to the published work of Crookshank, Flügge, Schenk, Sims Woodhead, and especially to that of Sternberg. My thanks are also due to Dr. Dundas Grant, and to Dr. Slater, Bacteriologist to St. George's Hospital, for kind advice and assistance in preparing these notes for publication. Space has been left in the notes for the insertion of new organisms as they may be discovered, or for notes as to special staining methods, and the index has been arranged accordingly.

ST. GEORGE REID.

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THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED.

The colonies are white.

The cocci are in chains (10).

Micrococ. ureæ liq.
Micrococ. of Manneberg.
Streptococ. coli gracilis.
Streptococ. liquefac.
Micrococ. Freudenreichi.
Streptococ. septicus liq.

In masses (11).

Staphylococ. pyogenes albus.
Micrococ. albus liq.
Staphylococ. salivarius septicus.
Micrococ. fœtidus.
Micrococ. of Freire.
Staphylococ. pyosepticus.
Staphylococ. epidermidis albus.
Micrococ. II. of Fischel.

As sarcinæ or diplococci (12).

Sarcina alba.
Sarcina candida.
Micrococ. of Heydenreich.
Diplococ. albicans amplus.

The colonies are red (13).*

Micrococ. roseus.
Micrococ. agilis.
Sarcina rosea.
Sarcina mobilis.
Diplococ. roseus.

The colonies are yellow.

Rapid liquefaction.

Masses (14).

Staphylococ. pyogenes aureus.
Staphylococ. pyogenes citreus.
Micrococ. flavus liq.
Micrococ. coronatus.
Micrococ. cremoides.
Micrococ. of Almquist.
Micrococ. fuscus.

Diplococci (15).

Diplococ. citreus liq.
Diplococ. fluorescens fœtidus.

Slow liquefaction (16).

Micrococ. flavus desidens.
Diplococ. citreus conglomeratus.
Diplococ. luteus.
Diplococ. subflavus.
Staphylococ. salivarius pyogenes.
Micrococ. aërogenes.
Diplococ. flavus liquefaciens tardus.
Micrococ. radiatus.
Sarcina aurantiaca.
Sarcina lutea.

* The numbers in brackets at the head of columns in the tables refer to the page on which the organisms are described.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

The colonies are

White.

Not confluent, growing slowly.

In chains (17).

Streptococ. pyogenes.
Streptococ. pyogenes longus.
Streptococ. pyogenes brevis.
Streptococ. pyogenes flexuosis.
Streptococ. pyogenes erysipelatos.
Streptococ. pyogenes articulorum.
Streptococ. pyogenes septicus.
Streptococ. pyogenes malignus.
Streptococ. brevis.
Micrococ. of cattle pneumonia.
Streptococ. coryzæ contagiosæ equorum.
Streptococ. conglomeratus.

Masses (18).

Micrococ. candicans.
Micrococ. aquatilis.
Staphylococ. cereus albus.
Micrococ. cumulatus tenuis.
Micrococ. gingivæ pyogenes.
Micrococ. concentricus.
Micrococ. acidi lactici.
Micrococ. rosettaceus.
Micrococ. salivarius septicus.

Diplococci (19).

Diplococ. albicans tardiss.
Diplococ. coryzæ.
Diplococ. of trachoma.
Micrococ. tetragenus mobilis ventriculi.
Micrococ. Manfredi.

Confluent, growing rapidly.

Singly or in masses (20).

Micrococ. ureæ.
Micrococ. viticulosus.

As diplococci (21).

Diplococ. lactcus faviformis.

As sarcinæ (22).

Micrococ. tetragenus.
Sarcina pulmonum.

Black (23).

Black torula.

Red (24).

Pink torula.
Micrococ. cinnabareus.
Micrococ. carneus.
Micrococ. cerasinus siccus.

Yellow.

As raised drops (25).

Staphylococ. cereus flavus.
Micrococ. flavus tardus.
Micrococ. luteus.
Micrococ. aurantiacus.
Micrococ. citreus.
Micrococ. fervidosus.
Micrococ. ochroleucus.
Staphylococ. viridis flavescens.
Sarcina ventriculi.

As films or flat deposits (24).

Micrococ. versicolor.
Diplococ. of spreading œdema.

There is no growth on gelatine (26).

Gonococcus.
Diplococ. meningitidis.
Micrococ. pyogenes tenuis.
,, tetragenus subflavus.
,, hæmatodes.
Diplococ. of acute pemphigus.
,, pneumoniæ
Micrococ. endocarditidis rugatus.
Streptococ. of Bonome.
,, giganteus urethræ.
Micrococ. of Kirchner.

Micrococci forming zooglœa masses:

Micrococ. viticulosus.
, plumosus.
,, candidus.
Micrococ. luteus.
Ascococcus Billrothii
Micrococ. ureæ.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

The bacillus is motile.

The organism is non-chromogenic.

Branched colonies (28).

Proteus vulgaris.
Proteus mirabilis.
Bac. subtilis.
,, mycoides.
,, figurans.
,, mesentericus fuscus.
Bac. tetani.
,, ramosus.
,, of Scheurlen.
Vibrio rugula.
Bac. vermiculosus.
Bac. pestifer.
,, nubilus.
,, albus putidus.

Colonies circumscribed (30).

Bac. megatherium.
,, mesentericus vulgatus.
Bac. of cholera.
,, of Finkler.
,, of Metschnikoff.
,, fœtidus ozænæ.
liquefaciens.
,, diffusus.
,, butyricus.
,, gasbildender.
,, liodermos.
,, of symptomatic anthrax.
Bac. inflatus.
,, lactis albus.
,, septicus ulceris gangrænosi.
Bac. albus cadaveris.
Urobacillus Pasteuri.
, Duclauxi.
,, Freudenreichi.
Proteus septicus.
,, sulfureus.
Bac. venenosus liquefac.
,, devorans.
,, phosphorescens.
,, tyrogenum.
,, gracilis.

The organism is chromogenic.

The colonies are green or yellow (32).

Bac. pyocyaneus.
Bac. termo of Vignal.
Bac. viscosus.
Bac. fluorescens liq.
Bac. melochloros.
Bac. arborescens.
Bac. aquatilis.
Bac. radiatus.
,, ochraceus.
Bac. citreus cadaveris.
Ascobacillus citreus.
Bac. scarlatinæ.
Bac. cuticularis.

Red (34).

Bac. ruber.
Bac. mesentericus ruber.
Bac. of Dantec.
Bac. of Canestrini.
Bac. rubidus.
Bac. rosaceum metalloides.
Bac. indicus.

Violet (35).

Bac. violaceus.
Bac. lividus.
Bac. cyanofuscus.
Bac. Ianthinus.

Is non-motile.

Non-chromogenic.

Branched colonies (36).

Bac. anthracis.
Bac. F of Vignal.
Bac. B of Vignal.
Bac. varicosus conjunctivæ.
Bac. pulpæ pyogenes.
Leptothrix buccalis of Vignal.
Bac. vermicularis.

Circumscribed colonies (37).

Bac. ulna of Vignal.
Bac. gingivæ pyogenes.
Bac. buccalis fortuitus.
Bac. glaucus.
Bac. filiformis.

Chromogenic.

Violet (38).

Bac. membranaceus amethystinus.
Bac. cœruleus.

Red (39).

Bac. prodigiosus.
Bac. mycoides roseus.
Bac. lactis erythrogenes.

Green or yellow (40).

Bac. buccalis minutus.
Bac. smaragdinus fœtidus.
Bac. graveolens.
Bac. cuticularis.
Bac. helvolus.
Bac. lactis erythrogenes.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

The bacillus is

- **Non-chromogenic.**
  - **Colonies as clear drops** (41).
    - Bac. of fowl cholera.
    - Bac. of swine plague.
    - Bac. salivarius septicus.
    - Bac. septicus vesicæ.
    - Bac. epidermidis.
  - **As flat deposits or films.**
    - **With smell** (42).
      - Bac. ureæ.
      - ,, pyogenes fœtidus.
      - Bac. coprogenes fœtidus.
    - **Without smell** (43).
      - Bac. acidi lactici.
      - Bac. coli.
      - ,, cavicida.
      - Bac. diphtheriæ columbarum.
      - Bac. of rabbit diphtheria.
      - Bac. of Koubasoff.
      - Bac. putrificus coli.
      - Bac. tenuis sputigenus.
  - **As nail-head projections.**
    - **With granular border** (44).
      - Bac. of Friedländer.
      - Bac. crassus sputigenus.
      - Bac. of typhoid.
      - Bac. endocarditidis griseus.
      - Bac. meningitidispurulentæ.
      - Bac. candicans.
      - Bac. enteritidis.
      - Bac. pneumosepticus.
      - Bac. of rhinoscleroma.
    - **With smooth border** (46).
      - Bac. capsulatus mucosus.
      - Bac.sycosiferus fœtidus.
      - Bac. striatus albus.
      - Bac. oxytocus perniciosus.
      - Bac. œdematis aërobicus.
      - Bac. albus.
      - Bac. limbatus acidi lactici.
      - Helicobacterium aërogenes.
      - Bac. Neapolitanus.
  - **Colonies branched** (47).
    - Bac. of mouse septicæmia.
    - Bac. multipediculus.
    - Proteus lethalis.
    - Proteus Zenkeri.
    - Proteus hominis capsulatus.
    - Bacterium Zopfii.
    - Bact. Zurnianum.
    - Bac. stolonatus.
- **Chromogenic.**
  - **Colonies white. Medium coloured.** (48).
    - Bac. erythrosporus.
    - Bac. virescens.
    - Bac. dentalis viridans.
    - Bac. fluorescens putidus.
    - Bac. cyanogenus.
    - Bac. janthinus.
    - Bac. iris.
  - **Colonies yellow** (49).
    - Bac. fluorescens.
    - Bac. aurantiacus.
    - Bac. aureus.
    - ,, fuscus.
    - ,, striatus flavus.
    - Bac. flavocoriaceus.
    - Bac. brunneus.
    - ,, subflavus.
    - ,, constrictus.
    - Bac. fluorescens aureus.
    - Bac. flavescens.
    - ,, spiniferus.
    - ,, Tizzoni.
    - ,, canalis parvus.

THE ORGANISM IS A BACILLUS.

There is no growth on gelatine.

Will grow on other artificial media at a temp. above 22° C. (51).

Bac. tuberculosis.
,, mallei.
,, septicus sputigenus.
,, diphtheriæ.
,, necrophorus.
,, conjunctivitis.
,, of influenza.
,, of Lumnitzer.
,, of Demme.
,, xerosis.
,, subtilis simulans.
,, of Kitasato (Bac. of bubonic plague).
,, tachysporus.

Has been described, but not grown (53).

Bac. lepræ.
,, of Lustgarten.
,, diphtheriæ vitulorum.
,, buccalis maximus.

THE ORGANISM IS A SPIRILLUM (54).

Spirillum Obermeieri.
,, anserum.
,, sputigenum.
,, dentium.
,, rugula.
,, linguæ.
,, nasale.
,, α, β, γ of Weibel.
,, aureum.
,, flavescens.
,, flavum.
,, concentricum.
,, choleræ.
,, of Finkler.
,, of Metschnikoff.
,, tyrogenum.
,, Miller.

Additional Organisms not classified.

Actinomyces (55). Plasmodium malariæ (55).

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED.

THE COLONIES ARE WHITE.

THE COCCI ARE PRINCIPALLY IN CHAINS.

Micrococcus ureæ liquefaciens (Flügge), from ammoniacal urine; spherical cocci 1·25 to 2 μ in diameter; a yellowish-white deposit is formed in the liquefied gelatine.

Micrococcus Freudenreichi, from milk which had undergone viscous fermentation, cocci having a diameter of 2 μ, singly or in chains.

Streptococcus liquefaciens (Sternberg), from intestinal secretions; oval cocci 0·4 μ in diameter, in pairs or chains.

Streptococcus of Manneberg, from urine in acute Bright's disease; cocci 0·9 μ in diameter, in pairs or short chains; stains by Gram.*

Streptococcus coli gracilis (Escherich), from the fæces of children fed on a flesh diet; cocci ·2 to ·4 μ in diameter in short S-shaped chains.

Streptococcus septicus liquefaciens (Babès), from blood in a case of septicæmia following scarlet fever; cocci 0·3 μ in diameter, in pairs or short chains; stains by Gram.

* Frequent allusion is made in the text to Gram's method of staining, as an aid to the diagnosis of a great number of micro-organisms; the method of procedure is therefore given. The section or fixed cover-glass preparation is gently warmed in Ehrlich's aniline-gentian-violet for 15 minutes, then placed in Gram's iodine solution (iodine, 1 part; potassium iodide, 2 parts; water, 300 parts) for 2 minutes, and transferred to absolute alcohol until decolorized. The bacteria are stained by the gentian violet, and the tissue can be counter-stained with eosin, picrocarmine, etc.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED.

THE COLONIES ARE WHITE.

THE COCCI ARE SINGLE OR IN MASSES.

Staphylococcus pyogenes albus, from pus, the most frequent pathogenic organism present. The cocci are from ·8 to ·9 μ in diameter, and are grouped in masses; stains by Gram.

Staphylococcus salivarius pyogenes (Biondi), from saliva in a case of scarlet fever anginosa, by inoculation through a guinea-pig; at the room temperature it forms white opalescent colonies, liquefying slowly; at 37° C. the colonies have a yellow coloration.

Micrococcus albus liquefaciens (von Besser), obtained from healthy nasal mucus; spherical cocci twice as large as Staphylococcus pyogenes albus, frequently in short chains.

Micrococcus fœtidus (Klamann), from the posterior nares; the cocci are of irregular size, frequently in chains or as diplococci; the liquefaction is slow, with a fœtid smell.

Micrococcus II. of Fischel, from blood in influenza; cocci 1 to 1·25 μ in diameter; the colonies are almost microscopic; the gelatine is very slowly liquefied.

Staphylococcus epidermidis albus (Welch), from the epidermis, probably one of the most frequent organisms present upon the surface of the body; resembles Staphylococcus pyogenes albus, the liquefaction is, however, very slow, and its pathogenic action extremely slight.

Staphylococcus pyosepticus, from abscess in the skin of a dog; resembles Staphylococcus pyogenes albus.

Micrococcus of Freire, from cases of yellow fever; cocci ·5 to ·8 μ in diameter: staining by Gram.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED.

THE COLONIES ARE WHITE.

THE COCCI ARE ARRANGED AS SARCINÆ OR DIPLOCOCCI.

Sarcina alba, small cocci arranged in pairs or tetrads, from air and water; grows very slowly at the room temperature, with very slight liquefaction; forms small round white colonies.

Sarcina candida, from air; cocci 1 to 1·5 μ in diameter, singly, or pairs, or tetrads; grows slowly, but with rapid liquefaction.

Diplococcus albicans amplus (Bumm), from vaginal mucus; resembles the gonococcus. The cocci are, however, larger, 2 to 2·8 μ in diameter.

Micrococcus of Heydenreich (micrococcus of Biskra button), obtained from the pus and serous fluid in cases of the Oriental skin affection known as Biskra button; diplococci about 1 μ in length, surrounded by a capsule.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED.

THE COLONIES ARE RED.

Diplococcus roseus (Bumm), from the air; resembles the gonococcus; the pairs are from 1 to 1·5 μ from pole to pole; forms pink elevated colonies.

Micrococcus roseus (Eisenberg), from influenza sputum; cocci ·8 to 1 μ in diameter, singly or in masses; forms minute pink colonies, developing slowly; in a week the colour resembles a red azalea blossom and liquefaction commences.

Micrococcus agilis (Ali-Cohen), from water; cocci 1 μ in diameter, with a slender flagellum; usually in pairs; stains best by Löffler.

Sarcina rosea (Schröter), from the air; large cocci in cubic packets.

Sarcina mobilis (Maurea), from ascitic fluid; cocci 1 to 5 μ in diameter, forming a red pigment; will not grow in incubating oven at 37° C.; is said to show slight rotatory movement.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED RAPIDLY.

THE COLONIES ARE YELLOW.

THE COCCI ARE IN MASSES.

Staphylococcus pyogenes aureus, from pus in acute abscesses and in suppurative processes generally; cocci ·8 to ·9 μ in diameter; grows rapidly at ordinary temperature, forming orange-yellow colonies; stains well with the aniline stains and by Gram.

Staphylococcus pyogenes citreus, resembles the above; the colonies formed are, however, of a lemon colour, and the liquefaction is not quite so rapid.

Micrococcus coronatus, cocci 1 to 1·2 μ in diameter, singly or in chains; the colonies appear as whitish-yellow points, surrounded by a zone of depression, with radiating processes.

Micrococcus flavus liquefaciens (Flügge), from air and water; large cocci in pairs or masses; forms small yellow colonies with a granular surface, with lines radiating from centre to circumference; the liquefying jelly remains clear, with a yellow deposit.

Micrococcus fuscus (Maschek), from water; elliptical cocci, sometimes even appearing as short rods.

Micrococcus cremoides, from water; cocci ·8 μ in diameter, arranged in grape-like masses growing in concentric rings with delicate radiating processes.

Micrococcus of Almquist, obtained from the bullæ of pemphigus neonatorum; cocci 0·5 to 1 μ in diameter, usually in pairs; resembles Staphylococcus pyogenes aureus in its morphology and growth.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS LIQUEFIED RAPIDLY.

THE COLONIES ARE YELLOW.

THE COCCI ARE ARRANGED AS DIPLOCOCCI.

Diplococcus citreus liquefaciens (Unna and Tommasoli), small oval cocci, in pairs, or tetrads, or short chains, each coccus about 0·4 to 0·1 μ in diameter; from the skin in cases of eczema seborrhœicum; the colonies appear first as minute white discs, becoming yellow in about fourteen days; the liquefaction is not very rapid; a flocculent deposit is formed in the softened gelatine.

Diplococcus fluorescens fœtidus (Klamann), from the posterior nares; cocci arranged in pairs 1·4 μ in diameter, sometimes forming short chains; the colonies are of a grayish-brown colour, the gelatine becoming of a greenish colour, giving off a fœtid odour, a shining iridescent film forms on the surface of the liquefied gelatine.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS SLOWLY LIQUEFIED.

THE COLONIES ARE YELLOW.

Micrococcus flavus desidens (Flügge), from air and water; small cocci, in pairs or chains; forms small yellowish-brown colonies, surrounded by a depression of liquefied gelatine.

Micrococcus radiatus (Flügge), from air and water; cocci 0·8 to 1 μ in diameter; colonies form a radiating growth of a yellowish-brown colour.

Micrococcus aërogenes (Miller), from the alimentary canal; large oval cocci, growing in flat yellowish-white colonies.

Diplococcus luteus (Adametz), from water; cocci in pairs, 1 to 1·2 μ in diameter, sometimes in chains of eight or ten elements; an actively motile coccus.

Diplococcus flavus liquefaciens tardus (Unna), from the skin in eczema seborrhœicum; biscuit-shaped diplococci, resembling the gonococcus, each element 0·5 to 0·8 μ in diameter; colonies form small circular yellow discs.

Diplococcus subflavus (Bumm), from vaginal secretion and lochial discharge; biscuit-shaped diplococci, the cells from 0·5 to 1·5 μ in diameter, resembling the gonococcus of Neisser; stains with the aniline colours and by Gram, this latter distinguishing it from the micrococcus of gonorrhœa; it liquefies blood serum.

Diplococcus citreus conglomeratus (Bumm), from gonorrhœal pus and from the air; resembles the gonococcus; the colonies first appear moist and shining, becoming cracked and scaly; the cocci are about 1·5 μ in diameter, frequently arranged in tetrads.

Sarcinæ aurantiaca and **lutea**, from air and water; cocci in pairs, tetrads, or packets, the cells of the S. lutea being the larger.

Staphylococcus salivarius pyogenes,* from saliva; when grown at 37° C., may be distinguished from Staphylococcus pyogenes aureus by the liquefaction being slower, and the colour formed being lighter; stains well by Gram's method.

* At ordinary temperatures the colonies of this organism are white, as described on p. 11.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, NOT CONFLUENT, GROWING SLOWLY.

THE COCCI ARE ARRANGED IN CHAINS.

Streptococcus pyogenes, from pus; spherical cocci, 0·4 to 1 μ in diameter, varying in size in different cultures, and even in the same chain; multiplying by binary division in one direction only, forming chains of which the elements generally appear as diplococci; stains well by Gram; grows slowly at the ordinary temperature as small punctiform, semi-transparent colonies. Various forms of this organism have been described in different diseases, as—

Streptococcus erysipelatos (Fehleisen), cocci in short, rigid chains, from the skin in a case of erysipelas.

Streptococcus pyogenes brevis and **longus**, supposed to vary as to their pathogenic virulence.

Streptococcus articulorum (Löffler), from diphtheritic false membranes; large irregular cocci in long, flexible chains.

Streptococcus septicus (Flügge), from foul soil; cocci generally in pairs; pathogenic for mice and rabbits.

Streptococcus pyogenes malignus (Flügge), from necrotic masses in a leucæmic spleen.

Streptococcus brevis (von Lingelsheim), from normal human saliva; grows more rapidly at ordinary temperature than Streptococcus pyogenes; cocci in pairs or short chains.

Streptococcus coryzæ contagiosæ equorum, found in the pus from the lymphatic glands of horses suffering from the disease known in Germany as Druse des Pferdes.

Streptococcus conglomeratus (Kurth), from cases of scarlet fever; grown in bouillon, the chains appear in tangled masses, single chains being rare.

Micrococcus of cattle pneumonia, cocci in short chains, surrounded by a transparent capsule, which is extremely difficult to demonstrate.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, NOT CONFLUENT, AND GROWING SLOWLY.

THE COCCI ARE IN MASSES.

Micrococcus candicans (Flügge), from air and water; spherical cocci, 1 μ in diameter.

Micrococcus aquatilis, from water; small cocci in irregular groups.

Staphylococcus cereus albus (Passet), from pus; large solitary cocci, 1·16 μ in diameter; the colonies resemble drops of stearin.

Micrococcus concentricus (Zimmerman), from water; cocci 0·9 μ in diameter; the colonies first appear as bluish-gray points.

Micrococcus acidi lactici, from cow's milk; large solitary cocci; the colonies have a yellowish tinge.

Micrococcus cumulatus tenuis (von Besser), from nasal mucus; large oval cocci in masses; the colonies on agar appear as thick transparent drops, with a brown nucleus and wrinkled margin.

Micrococcus gingivæ pyogenes (Miller), from an alveolar abscess; large, irregular cocci, solitary or in pairs; colonies have a purple tint by transmitted light.

Micrococcus rosettaceus, from water; spherical cocci; the colonies have a yellowish tinge.

Micrococcus salivarius septicus (Biondi), from the saliva in a case of puerperal septicæmia, by inoculation through a guinea-pig; oval cocci, which, when multiplying rapidly, show slight lateral protrusions; stains well by Gram.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, GROWING SLOWLY, AND NOT CONFLUENT.

THE COCCI ARE ARRANGED AS DIPLOCOCCI.

Diplococcus albicans tardissimus, from vaginal secretion; it resembles the gonococcus, but grows slowly on gelatine; the colonies have a dentate margin.

Micrococcus of trachoma (Sattler), from the trachomatous follicles in cases of Egyptian ophthalmia; a small diplococcus, growing very slowly, the colonies having a yellowish tinge and a wavy margin.

Diplococcus coryzæ (Hajek), from nasal mucus in acute epidemic nasal catarrh; diplococci resembling short bacilli with rounded ends; clear drop-like colonies.

Micrococcus tetragenus mobilis ventriculi (Mendosa), from secretion from the human stomach; cocci in tetrads, enclosed in a gelatinous capsule, and supposed to be motile.

Micrococcus of Manfredi, from sputum in croupous pneumonia following measles; oval cocci, 0·6 to 1 μ in diameter; associated in pairs, sometimes forming short chains; colonies appear as thin, transparent plates with a pearl-gray lustre; stains well by Gram.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, CONFLUENT, AND GROWING RAPIDLY.

THE COCCI VARY IN THEIR ARRANGEMENT.

Micrococcus ureæ (Pasteur), from air and from ammoniacal urine; cocci 0·8 to 1 μ in diameter, either singly, in pairs, chains, tetrads or zoogloea masses; old cultures have a paste-like odour.

Micrococcus viticulosus (Katz), from air and water; oval cocci, about 1 μ in diameter; forms thick zoogloea masses; the colonies consist of hair-like branches from a centre forming a delicate network.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, CONFLUENT, AND GROWING RAPIDLY.

THE COCCI ARE ARRANGED AS DIPLOCOCCI.

Diplococcus lacteus faviformis, from sputum and from healthy vaginal mucus; cocci 1·25 μ in diameter; forms milk-white colonies.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE WHITE, CONFLUENT, AND GROWING RAPIDLY.

THE COCCI ARE ARRANGED AS TETRADS OR AS SARCINÆ.

Micrococcus tetragenus, very common in phthisical sputum, also found in normal saliva and in pus; micrococci 1 μ in diameter, dividing in two directions, forming tetrads united by a gelatinous envelope; grows rather slowly at ordinary temperature, as small white spherical colonies; stains well by Gram.

Sarcina pulmonum (Hauser), from phthisical sputum; cocci 1 to 1·5 μ in diameter, in tetrads or packets; forms a pearl-gray layer on gelatine; when cultivated in urine causes ammoniacal decomposition of urea.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE BLACK.

Black torula, from air; forms circular raised black colonies on gelatine.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE RED.

Micrococcus cinnabareus (Flügge), from air and water; large spherical cocci, in pairs or tetrads; the colonies appear on the sixth day, of a brick-red colour.

Pink torula, from the air; oval cells, 5 to 8 μ in diameter, forming a coral pink growth on surface of gelatine.

Micrococcus cerasinus siccus (List), from water; cocci 0·25 to 0·35 μ in diameter; grows best at 37° C.; forms a cherry-red layer on the agar.

Micrococcus carneus (Zimmerman), from water; cocci about ·8 μ in diameter, united in grape-like masses.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE YELLOW, AS FLAT DEPOSITS.

Micrococcus versicolor, from water; small cocci, in pairs or masses; whitish-yellow colonies, having a yellowish-green iridescent shimmer, becoming brown; the medium also becomes coloured.

Diplococcus of spreading œdema (Harris, *Journal of Pathology*, 1893), from the blood and tissues of guinea-pig inoculated from case of spreading œdema; cocci 1 μ in diameter, in pairs enclosed in a capsule; cream or buff coloured fissured colonies. This organism is markedly pleomorphic.

THE ORGANISM IS A MICROCOCCUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE YELLOW, AS RAISED DROPS.

Staphylococcus cereus flavus (Passet), from pus; resembles the other pus cocci; is rather more irregular in size; sometimes forms short chains; colonies lemon-coloured.

Micrococcus flavus tardigradus (Flügge), from air and water; large cocci, generally single.

Micrococcus luteus (Cohn), from water; small non-motile elements, forming a flocculent zoogloea.

Micrococcus aurantiacus, from water; grows very slowly, forming small orange circular colonies; oval cocci 1·5 μ in diameter.

Micrococcus fervidosus (Adametz), from water; colonies have a finely-toothed margin.

Micrococcus citreus, from water; cocci 1·5 μ in diameter, in pairs or chains.

Staphylococcus viridis flavescens (Guttmann), from the vesicles of varicella; resembles Staphylococcus pyogenes aureus, but does not liquefy the gelatine; the colonies are greenish-yellow.

Micrococcus ochroleucus, from urine; cocci 0·5 to 0·8 μ in diameter, solitary, in pairs, or short chains; the pigment is soluble in alcohol, and is decolourized by acids; the colonies are rather branching in form.

Sarcina ventriculi, from the stomach; cells 2·5 μ in diameter, generally appearing as diplococci or tetrads, rarely in packets.

THE ORGANISM IS A MICROCOCCUS.

THERE IS NO GROWTH ON GELATINE AT THE ORDINARY TEMPERATURE.

Micrococcus of gonorrhœa—Gonococcus (Neisser), from gonorrhœal pus; biscuit-shaped cocci in pairs or groups of four, having the flattened surfaces opposed, leaving a clear interspace, the long diameter of a pair of cells being about 0·8 to 1·6 μ; stains well by the aniline stains, but not by Gram. Methylene blue and eosin form a good double stain; the special characteristic of the cocci is the fact that they are within the pus-cells; can best be cultivated on human blood serum at 34° C.

Micrococcus of Kirchner, from bronchial secretion in epidemic influenza; spherical cocci in pairs, surrounded by a capsule; does not stain by Gram.

Micrococcus hæmatodes, from the foul sweat of the axilla; when grown at 37° C. on the coagulated white of hen's eggs the colonies appear of a blood-red colour.

Diplococcus of acute pemphigus (Demme), from the bullæ in cases of acute pemphigus; grown at 37° C. on agar, it forms round, milk-white colonies with radiating processes.

Diplococcus intercellularis meningitidis (Weichselbaum), from the exudate in cases of cerebro-spinal meningitis; cocci in pairs; fours or small groups formed in the interior of the pus-cells; do not stain by Gram.

Micrococcus pyogenes tenuis (Rosenbach), from pus; rather large cocci, rarely arranged in masses; the poles of the cells, when stained, appear to be separated by a clear interspace.

Micrococcus tetragenus subflavus (von Besser), from nasal mucus; oval cocci, usually in tetrads; will not grow on gelatine at ordinary temperature, but will on agar, forming dirty white colonies with wrinkled margin.

Micrococcus endocarditidis rugatus (Weichselbaum), from the affected cardiac valves in a case of ulcerative endocarditis; resembles Staphylococcus pyogenes, but will not grow at ordinary temperature; at 37° C. on agar forms small brown wrinkled colonies.

Micrococcus or **Diplococcus pneumoniæ**, from pneumonic sputum, various purulent secretions, healthy human saliva, etc.; spherical cocci, in pairs, resembling bacilli, sometimes forming short chains; in sections a clear, transparent capsule can be demonstrated; stains by Gram, thus distinguishing it from Friedländer's bacillus; grows best between 34° and 37° C., the colonies appearing as minute transparent drops.

Streptococcus of Bonome, from cerebro-spinal meningitis.

Streptococcus giganteus urethræ (Lustgarten), from the healthy human urethra; cocci in long chains, which appear as tangled masses; grows on agar as drop-like colonies, iridescent by transmitted light.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS MOTILE AND NON-CHROMOGENIC.

THE COLONIES HAVE A BRANCHED ARRANGEMENT.

Bacillus subtilis, from hay, water, air, soil, etc.; bacilli 4 to 6 μ in length, 2 μ in breadth, actively motile, with a terminal flagellum at each end; liquefies blood serum and forms a characteristic wrinkled layer on agar; forms oval spores in the centre of the rods.

Bacillus ramosus, from soil and water; very common; resembles subtilis, but thicker; slightly motile; forms oval spores in the centre of the rods.

Bacillus mycoides, common in soil and water; bacilli 1·6 to 2 μ long; usually in long filaments; sporulation well marked.

Bacillus of tetanus, from cases of tetanus and from superficial garden soil; obtained in pure cultures by Kitasato, 1889; slender straight bacilli, with round ends, often in filaments; spores are developed at one end of the organism, giving it the characteristic breast-pin appearance; is distinctly anaërobic; will not grow below 14° C. The colonies at first resemble those of Bacillus subtilis, but the liquefaction is much slower; a small amount of gas is formed during liquefaction.

Bacillus of Scheurlen, from cancerous tissue and from the scales of epidermis round the nipple on the healthy mammæ; bacilli 1 to 2 μ long, forming long oval spores.

Bacillus vermiculosis, from water; bacilli 1·5 μ long, with rounded ends; grows very slowly at room temperature.

Bacillus pestifer (Frankland), from air; bacilli 2·3 μ long, with rounded ends, often growing into filaments.

Bacillus nubilus (Frankland), from London water; bacilli 3 μ long, in chains; on the third day colonies show as a network of interlacing filaments.

Bacillus albus putidus, small bacilli, growing in filaments; forms small round colonies, which have a faint brown tinge, and are surrounded by a clear ring, growing rapidly at ordinary temperature.

Bacillus figurans, from water; bacilli varying in length, sometimes very short, at other times in long threads, the superficial growth on gelatine plates forms a fine interlacing network.

Bacillus mesentericus fuscus, from air, soil, etc.; a very common organism; slender short bacilli in pairs or fours, with small refracting spores, situated irregularly.

Vibrio rugula, from fæces and dental tartar; rods 6 to 8 μ in length; spores are developed at one extremity, causing club-shaped enlargement.

Proteus vulgaris,* a very common organism in putrefying animal matter; the bacillus varies in length from 1 to 3 μ, is actively motile, with a terminal flagellum; the growth on gelatine is typical: depressions filled with liquid gelatine and white masses of bacilli, with branches spreading out over the gelatine; is pathogenic for rabbits and guinea-pigs.

Proteus mirabilis,* resembles the above, but does not liquefy the gelatine so quickly; the involution forms are more varied.

* These, with Proteus Zenkeri, were formerly included under the name Bacterium termo.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS MOTILE, NON-CHROMOGENIC, WITH CIRCUMSCRIBED COLONIES.

Bacillus gracilis (Zimmerman), from water; very slender, fine rods.

Bacillus of cholera (Spirillum choleræ), discovered by Koch, 1884; slightly-curved rods with rounded ends, 0·8 to 2 μ in length, sometimes growing into long spiral filaments; actively motile; will not grow below 14° C. or above 42° C.; will not stain by Gram; gives the indol reaction with H_2SO_4 added to peptonized bouillon.

Bacillus or **Spirillum of Finkler**, from the fæces of persons suffering from cholera nostras; resembles the cholera bacillus; the gelatine, however, liquefies more rapidly, and in rather a different manner.

Bacillus or **Spirillum Metschnikovi**, from the intestinal secretion of fowls suffering from a disease resembling fowl cholera; curved rods with round ends in spiral filaments; the segments are shorter, thicker, and more curved than in the comma bacillus.

Bacillus or **Spirillum tyrogenum** (Deneke), from old cheese; resembles Bacillus choleræ and Finkler; the indol reaction is very faint.

Bacillus of symptomatic anthrax, from the affected tissues of cattle; bacilli 3 to 5 μ long, with oval spores rather thicker than the rods, lying slightly to one end; a number of flagella can be demonstrated by Löffler's staining; very motile; decolourised by Gram.

Bacillus megatherium, found in water from boiled cabbage-leaves; bacilli 6 μ long, with rounded ends, forming chains; sporulation well marked.

Bacillus butyricus of Hueppe, from milk; bacilli 2 μ long, slightly curved, growing in filaments, forms oval spores in the centre of the rods.

Bacillus mesentericus vulgatus, from air, etc.; very common; thick bacilli with round ends, 1 to 3 μ long, often in pairs or chains showing spherical spores; liquefies blood serum; colonies form a grayish wrinkled film on the surface of the liquefied gelatine.

Bacillus gasoformans (or gasbildender), from water; a very active small bacillus; liquefies the gelatine, forming bubbles of gas.

Bacillus liodermos, from milk; resembles Bacillus mesentericus vulgatus; on agar forms a white, rosette-shaped growth.

Bacillus inflatus (Koch), from air; bacilli 4 to 5 μ long, sometimes in filaments, showing two large spores in each rod (rare).

Bacillus lactis albus, from milk; bacilli 3 μ long, in long filaments; causes coagulation of milk and subsequent solution of the casein and production of leucin and tyrosin.

Bacillus liquefaciens, from water; short, thick bacilli with round ends; will not grow at 37° C. The culture has a foul odour.

Bacillus diffusis (Frankland), from soil; bacilli 1·7 μ long; solitary, in pairs or filaments.

Bacillus fœtidus ozænæ (Hajek), from the nasal secretion in ozena; short bacilli, in pairs or chains; stains well with Löffler's blue; will not stain by Gram; a gas-bubble is formed during liquefaction; the smell resembles that of ozena.

Bacillus septicus ulceris gangrænosi (Babès), from the blood and organs of a boy who died from septicæmia, following gangrene of the skin, etc.; oval or rod-shaped bacilli with round ends; a yellow deposit is seen at the bottom of the liquefied gelatine.

Bacillus albus cadaveris (Stricker), from the blood of two bodies four days after death; bacilli 2 to 3 μ long.

Bacillus venenosus liquefaciens (Vaughan), from water; bacilli with rounded ends; the gelatine liquefies very slowly.

Bacillus devorans (Zimmerman), from well-water; bacilli with rounded ends; solitary, in pairs or chains; a gas-bubble is formed in gelatine stick cultures.

Proteus septicus (Babès), from the intestinal canal in a case of septicæmia; curved motile rods or filaments, often in chains; liquefies blood serum; cultures have a very offensive odour.

Proteus sulfureus, from water; resembles Proteus vulgaris.

Urobacillus Pasteuri (Miquel), from decomposing urine; bacilli 4 to 6 μ long, generally in pairs; will only grow on nutrient gelatine when alkaline, or when urea is added, forms spherical spores at one extremity of the rod.

Urobacillus Duclauxi (Miquel), from sewer-water; slender filaments, 2 to 10 μ long.

Urobacillus Freudenreichi (Miquel), from air, etc.; rounded rods, 5 to 6 μ long.

Bacillus phosphorescens (Fischer), from sea-water; small, thick bacilli with rounded ends, forming threads.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS MOTILE.

THE COLONIES ARE GREEN OR YELLOW.

Bacillus fluorescens liquefaciens, from water; small bacilli, in pairs; an air-bubble forms on the surface of the liquefied gelatine in stick cultures.

Bacillus melochloros (von Schrötter), from air; characterized by its rapid growth, grayish-white colonies, appearing in four hours, becoming yellow on the second day; slender rods with round ends; actively motile (rare).

Bacillus aquatilis (Frankland), from water; short rods forming filaments; feebly motile; pale yellow colonies.

Bacillus radiatus aquatilis (Zimmerman), from Chemnitz water; radiate colonies, having fine filamentous offshoots.

Bacillus ochraceus (Zimmerman), from Chemnitz water.

Bacillus pyocyaneus (Gessard), from green pus; slender rods with rounded ends provided with a flagellum; the fluorescent green tint is developed in about two days, and gradually changes to olive green.

Bacillus citreus cadaverus (Strassmann), from the blood of a cadaver fifty hours after death; oval bacilli, 0·9 μ long, in chains.

Bacillus termo of Vignal, from healthy salivary secretion; bacilli 1 to 2 μ long, constricted in the centre, resembling diplococci; actively motile; liquefies blood serum; has a putrefactive odour.

Bacillus viscosus, from water; resembles exactly Bacillus fluorescens liquefaciens.

Ascobacillus citreus (Unna and Tommasoli), from the skin in a case of seborrhœic eczema; small motile bacilli 1 μ long; the growth on potato resembles the tracing on a vine-leaf.

Bacillus scarlatinæ (Klein), from scarlet fever; said to be identical with Klein's Streptococcus scarlatinæ; inoculation experiments gave negative results; a small bacillus; motility unknown.

Bacillus arborescens, from London water; bacilli with round ends, 2·5 μ long, in flexible filaments; motility doubtful; freely-branching colonies, becoming yellowish-green and strongly iridescent.

Bacillus radiatus (Lüderitz), obtained from garden earth by inoculation through guinea-pigs; bacilli with round ends, 4 to 7 μ long, forming long filaments; the colonies are surrounded by interlacing fibrils resembling a mycelium, and give off an unpleasant odour; blood serum is rapidly liquefied.

Bacillus pyocyaneus (Ernst), from green pus; slender bacilli, 2 to 4 μ long; differs from the bacillus of Gessard in being non-pathogenic; the brown growth on potatoes, when touched with a platinum needle, becomes dark-green, fading to brown again in half an hour (chameleon phenomenon).

Bacillus cuticularis. See p. 40, the motility being doubtful.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE BACILLUS IS MOTILE.

THE COLONIES ARE RED.

Bacillus ruber, from water; a medium-sized bacillus growing in threads.

Bacillus mesentericus ruber (Globig), slender bacilli with round ends, in pairs or chains; forms oval spores having great resistance to heat.

Bacillus of Canestrini, from infected beehives.

Bacillus of Dantec, from salt codfish; resembles the bacillus of tetanus.

Bacillus rubidus (Eisenberg), from water; bacilli with round ends, often in chains; liquefies blood serum.

Bacillus rosaceum metalloides (Dowdeswell), bacilli about 1 μ long; forms a magenta-red pigment with a metallic lustre.

Bacillus Indicus (Koch), from the contents of a monkey's stomach; brick-red colonies, liquefying blood serum.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS MOTILE.

THE COLONIES ARE VIOLET.

Bacillus violaceus, from water from the Thames and Spree; motile bacilli with rounded ends; liquefies blood serum.

Bacillus ianthinus (Zopf), from Chemnitz water.

Bacillus lividus, from water at Berlin.

Bacillus cyano-fuscus (Beyerinck), from size, glue and cheese; bacilli 0·2 to 0·6 μ long; when grown in $\frac{1}{2}$ per cent. peptone solution the medium becomes green, changing to blue, then brown and black, finally becoming colourless.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS NON-MOTILE AND NON-CHROMOGENIC.

THE COLONIES ARE BRANCHING.

Bacillus of anthrax, rod-shaped bacilli, having a length of 3 to 5 μ sometimes in filaments; sporulation well marked; the spores are highly refractive oval bodies, appearing in the centre of the rods, and are set free by the absorption of the protoplasm; stains by Gram; liquefies blood serum; on agar the colonies form a fine network of interlacing filaments.

Bacillus vermicularis (Frankland), from river-water; bacilli 2 to 3 μ long, with rounded ends, forming oval spores in the centre of the rods.

Leptothrix buccalis (Vignal), from the mouth; bacilli 1 to 30 μ in length, 1 μ in breadth, characterized by transverse partitions in the interior of the rods, visible after staining; very slow growth; in gelatine stick cultures a bluish mycoderma forms on the surface of the liquefied gelatine.

Bacillus F of Vignal, from healthy salivary secretion; bacilli 1 to 2 μ in length, with rounded ends; grows on gelatine as small, white, opaque colonies, divided into segments; the gelatine is very slowly liquefied, a white mycoderma forming on the surface, and a white deposit at the bottom of the tube; blood serum is slowly liquefied.

Bacillus B of Vignal, from healthy buccal secretion; bacilli with square ends, 1 to 6 μ long; sometimes in chains; forms small gray colonies, with undulating margins; a white membrane forms on the surface of the liquefied gelatine.

Bacillus varicosus conjunctivæ (Gombert), from the healthy conjunctival sac; large bacilli, 2 to 8 μ long, with round ends; sometimes constricted in the centre.

Bacillus pulpæ pyogenes (Miller), from gangrenous tooth-pulp; slightly-curved bacilli with pointed ends.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS NON-MOTILE AND NON-CHROMOGENIC.

THE COLONIES ARE CIRCUMSCRIBED.

Bacillus ulna (Vignal), from sputum; straight bacilli with rounded ends, in pairs, liquefying the gelatine in zones, forming a white film on the surface and white flocculi at the bottom of the liquid gelatine; liquefies blood serum; cultures have an odour of putrefaction.

Bacillus gingivæ pyogenes (Miller), from an alveolar abscess; thick rods with rounded ends, singly or in pairs; forms a greenish layer on agar.

Bacillus buccalis fortuitus (Bacillus J of Vignal), from healthy salivary secretion; bacilli with square ends, 1 to 3 μ long; forms a considerable whitish deposit in the liquefied gelatine, with suspended white flocculi.

Bacillus filiformis (Tils), from water; bacilli 4 μ long, in chains; colonies have a dentate margin.

Bacillus glaucus (Maschek), from water; slender bacilli, varying in length; gray colonies with sharply-defined outlines.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS NON-MOTILE AND CHROMOGENIC.

THE COLONIES ARE VIOLET.

Bacillus membranaceus amethystinus (Eisenberg), from well -wa at Spalato.

Bacillus cœruleus, from the water of the Schuylkill River; produces a beautiful blue pigment; the colonies on potato are dark-blue, later becoming almost black.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS NON-MOTILE AND CHROMOGENIC.

THE COLONIES ARE RED.

Bacillus prodigiosus, rod-like bacilli, 1·5 μ in length; from amyloid substances; forms the blood-red stains sometimes seen on potato or bread (bleeding bread); the length of the bacilli hardly exceeds their breadth; by continuous culture in the incubating oven the bacillus ceases to form pigment—but the function generally is restored by cultivation at ordinary temperature.

Bacillus mycoides roseus (Scholl), from soil; resembles the anthrax bacillus.

Bacillus lactis erythrogenes. See p. 40.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS LIQUEFIED.

THE ORGANISM IS NON-MOTILE AND CHROMOGENIC.

THE COLONIES ARE GREEN OR YELLOW.

Bacillus graveolens, from the scales of epidermis between the toes; bacilli ·8 μ in length, almost the same in breadth, resembling micrococci; the cultures have a disagreeable odour; blood serum is liquefied.

Bacillus cuticularis (Tils), from water; bacilli 2 to 3 μ long, 0·5 μ broad, sometimes in filaments; motility doubtful, some of the shorter rods appearing to have slight movement.

Bacillus lactis erythrogenes (Hueppe), bacillus of red milk, also found in the fæces of a sucking child; short bacilli, 1 to 1·4 μ in length; the colonies are first yellow, becoming pink, and give off a very offensive smell.

Bacillus smaragdinus fœtidus, from nasal secretion in ozena; small, slender, slightly-curved bacilli, half the size of Bacillus tuberculosis, usually lying in parallel groups; on agar in twenty-four hours there is a profuse white growth; in forty-eight hours the whole of the medium becomes emerald green, later on becoming brown.

Bacillus buccalis minutus (Bacillus G of Vignal), short bacilli as broad as long; from healthy human saliva; the two ends stain more deeply than the centre; forms on agar greenish-yellow plaques, which are easily removed by the needle.

Bacillus helvolus (Zimmermann), from Chemnitz water.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE COLONIES ARE NON-CHROMOGENIC.

THE COLONIES RESEMBLE CLEAR DROPS.

Bacillus salivarius septicus (Biondi), from saliva; short rods in chains or small masses; it is best grown in medium to which a little dilute hydrochloric or phosphoric acid has been added. By some authorities this bacillus is considered to be identical with Diplococcus pneumoniæ; Schenk describes it as a short-pointed bacillus in chains or clumps.

Bacillus septicus vesicæ (Clado), from urine in cases of cystitis; bacilli, 1 to 2 μ long, with rounded ends, not united in pairs or chains.

Bacillus epidermidis (Leptothrix epidermidis), bacilli 2 to 3 μ long; never united in pairs or chains: obtained from the scales of epidermis between the toes; forms long, oval spores.

Bacillus of fowl cholera (Klein), from the blood of chickens dying of fowl cholera, and differentiated from Pasteur's bacillus of fowl cholera (Bacillus septicæmia hæmorrhagica) by being non-pathogenic to rabbits; bacilli with rounded ends, 1 to 2 μ long, often in pairs; colonies appear as whitish discs with irregular margins.

Bacillus of swine plague, bacilli with rounded ends, about a third smaller than Bacillus typhosus; the ends stain, leaving the centre clear; it is distinguished from the bacillus of hog cholera by its producing indol and phenol in solutions containing peptone, and in its coagulating milk, with acid reaction; will not stain by Gram; by many considered identical with the bacillus of hog cholera.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS NON-CHROMOGENIC.

THE COLONIES APPEAR AS THIN FILMS, OR FLAT DEPOSITS, HAVING AN UNPLEASANT ODOUR.

Bacillus ureæ (Leube), from ammoniacal urine; short, thick rods; the colonies, by their coalescence, give the gelatine the appearance of ground glass.

Bacillus pyogenes fœtidus (Passet), from a rectal abscess; short bacilli, 1·45 μ long, with rounded ends, in pairs or chains; slightly motile.

Bacillus coprogenes fœtidus (Schottelius), from pigs dying of rouget; resembles Bacillus subtilis, but shorter, with rounded ends; the colonies have a yellowish tinge with an intensely fœtid odour.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS NON-CHROMOGENIC.

THE COLONIES APPEAR AS THIN FILMS OR FLAT DEPOSITS WITHOUT ANY ODOUR.

Bacillus of Koubasoff, from the stomach in cases of cancer; bacilli with rounded ends or with one end pointed; about three times the size of Bacillus tuberculosis, spore formation in the centre of the rods.

Bacillus putrificus coli, from human fæces; slender bacilli, 3 μ long; actively motile, having a spore at one end, giving them a drumstick appearance.

Bacillus tenuis sputigenus (Pansini), from sputum; short capsuled bacilli, usually in pairs; stains by Gram.

Bacillus acidi lactici (Hueppe), from sour milk; bacilli 1 to 2 μ long, often in pairs or short chains; forms spherical spores at the ends of the rods.

Bacillus coli communis, from fæces, air, blood, etc.; very common; short rods with rounded ends, 2 to 3 μ long; sometimes constricted in the centre resembling a diplococcus, in pairs or short chains; stains irregularly, especially in old cultures.

Bacillus cavicida (Brieger), from human fæces; believed to be identical with Bacillus coli; on gelatine plates the colonies form whitish concentric rings supposed to be characteristic.

Bacillus diphtheriæ columbarum (Löffler), from pigeons dying from a species of diphtheria; short bacilli with round ends, in irregular masses; resembles the bacillus of fowl cholera.

Bacillus of rabbit diphtheria (Ribbert), from rabbits dying from a diphtheritic inflammation of the intestinal mucous membrane; bacilli with rounded ends, 3 to 4 μ long, in pairs or filaments; does not stain by Gram.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS NON-CHROMOGENIC.

THE COLONIES APPEAR AS WHITE DISCS OR NAIL-HEAD PROJECTIONS, WITH AN IRREGULAR OR GRANULAR BORDER.

Bacillus typhosus, from the spleen, diseased intestinal glands, and alvine discharges in typhoid fever; bacilli 1 to 3 μ long, with rounded ends, actively motile; refractive granules sometimes appear at the ends of the rods; numerous flagella may be demonstrated; will not stain by Gram.

Bacillus of Friedländer (pneumococcus), short rods with rounded ends, enclosed in a capsule; forms the characteristic nail-head growth in gelatine stick cultures; the capsule cannot be demonstrated in specimens from artificial media, but can be seen in preparations taken from the blood of an inoculated animal and properly stained; the rods often resemble micrococci, and are usually in pairs or short chains; does not stain by Gram.

Bacillus endocarditidis griseus, from ulcerated cardiac valves; short motile rods, 1 to 3 μ long, with round or pointed ends; stains by Gram.

Bacillus meningitidis purulentæ, from the pus from a case of purulent meningitis; bacilli 2 μ long, often in filaments; does not stain by Gram; the colonies have a pale brown colour.

Bacillus pneumosepticus (Babès), from the blood in a case of septic pneumonia; short, straight bacilli; does not stain by Gram.

Bacillus crassus sputigenus (Kreibohm), from sputum; short, thick, sausage-shaped bacilli, very irregular in outline; sporulation occurs at 35° C.; in stick cultures forms a nail-head growth; stains by Gram.

Bacillus candicans (Frankland), from soil; short, thick bacilli resembling micrococci; in gelatine stick cultures the colonies resemble drops of milk.

Bacillus of rhinoscleroma (von Frisch), from the affected nasal mucous membrane in cases of rhinoscleroma; short bacilli, generally in pairs, surrounded by a capsule resembling Bacillus of Friedländer; stains by Gram; in gelatine stick cultures the growth resembles that of Bacillus Friedländer; on plates the colonies are white, spherical, with a granular border.

Bacillus Enteritidis (Gärtner) from the tissues of a cow that had suffered from mucous diarrhœa, and from the spleen of a man who died twelve hours after eating the flesh; short motile bacilli in pairs or chains; one end of the organism stains more deeply than the other; when in pairs the deeply-stained ends are always in apposition.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS NON-CHROMOGENIC.

THE COLONIES RESEMBLE WHITE DISCS OR NAIL-HEAD PROJECTIONS, WITH SMOOTH BORDER.

Bacillus oxytocus perniciosus, from stale milk; short bacilli with round ends, thicker than Bacillus acidi lactici; colonies have a yellow tinge; without smell.

Bacillus sycosiferus fœtidus (Tommasoli), from the hair follicles in sycosis; short immotile rods with round ends; will set up irritation at the base of the hairs if rubbed into the skin.

Bacillus œdematis aërobicus, Klein's bacillus of malignant œdema; bacilli 0·8 to 2 μ long, in filaments; will not stain by Gram.

Bacillus albus, from water; short motile bacilli with blunt ends, forming chains; forms a milk-white layer on agar.

Bacterium aërogenes (Miller), from alimentary canal; small motile bacilli, varying in length.

Bacillus capsulatus mucosus (Fasching) from nasal secretion in influenza; non-motile bacilli 3 to 4 μ long, enclosed in a capsule containing from one to four organisms; will not stain by Gram.

Bacillus Neapolitanus (Emmerich), from the blood and organs of cholera cadavers; small bacilli, resembling Bacillus coli; will not stain by Gram; the colonies resemble drops of mucus.

Bacillus striatus albus (von Besser), from healthy nasal mucus; rather rare; short, thick bacilli, resembling Bacillus diphtheriæ; slightly curved; stains slightly irregularly with methylene blue; grows at the ordinary temperature.

Bacillus limbatus acidi lactici (Marpman), from fresh milk; short, thick, capsuled bacilli, usually in pairs; grows very slowly; when grown in milk, a reddish tinge is apparent in twelve hours; coagulation of casein occurs in twenty-four hours, with acid reaction.

Helicobacterium aërogenes (Miller), from the alimentary canal; slender bacilli growing in long filaments; this organism and the Bacterium, Bacillus and Micrococcus aërogenes offer great resistance to acid secretions, passing through the stomach into the intestinal canal uninjured.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS NON-CHROMOGENIC.

THE COLONIES ARE BRANCHED.

Bacterium Zopfii (Flügge), from the intestines of chicken; an actively motile bacillus, 2 to 5 μ long; the colonies resemble those of Bacillus figurans.

Bacillus of mouse septicæmia (Koch's bacillus of hog erysipelas), very minute bacilli, 1 μ in length; the motility is doubtful; the colonies are characteristic, forming a delicate, cloud-like, radiating growth; stains readily by Gram.

Bacterium Zürrianum (Adametz), from water; short rods with pointed ends, about 1 μ in length; stains more deeply at the extremities than in the centre; the colonies resemble clusters of grapes.

Bacillus stolonatus, from water; a short motile bacillus; on agar the colonies are characteristic, branching and rebranching from the central growth.

Bacillus multipediculus (Flügge), from air and water; long, slender bacilli, forming zooglœa masses; the colonies send off long, slender, segmented processes, resembling the legs or antennæ of an insect.

Proteus lethalis (Babès), from septicæmic lung; short rods with rounded ends, swollen in the centre; forms short, flexible filaments; stains by Gram; is not killed by a temperature of 80° C.; the colonies are slightly yellow.

Proteus Zenkeri (Hauser), from putrefying animal matter; motile bacilli, from 1 to 2 μ in length; is without odour, and does not liquefy blood serum; colonies form central laminated masses, giving off processes forming round colonies at their extremities.

Proteus hominis capsulatus, bacilli varying in size; rather thicker than the anthrax bacillus; irregular in outline, non-motile and capsuled; stains by Gram; the growth in gelatine stick cultures resembles that of Friedländer's bacillus.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS CHROMOGENIC.

THE COLONIES APPEAR WHITE, THE MEDIUM BECOMING COLOURED.

Bacillus iris, small, slender, non-motile bacilli, producing a fluorescent green colour, becoming yellow, and finally dark green.

Bacillus erythrosporus (Eidam), from water and putrefying flesh infusions, small motile bacilli in short filaments, forming oval spores; this organism will not grow in the incubating oven; the medium becomes green by transmitted, yellow by reflected, light.

Bacillus fluorescens putidus (Flügge), from water; the gelatine acquires a fluorescent green colour, with an odour of trimethylamin.

Bacillus virescens (Frick), from green sputum; an actively motile bacillus, 1 to 3 μ in length, forming filaments; a green pigment is formed after several weeks, becoming brown and then dark green and fluorescent.

Bacillus dentalis viridans (Miller), from carious dentine; slightly-curved bacilli with pointed ends; the gelatine cultures acquire an opalescent green colour.

Bacillus cyanogenus (Hueppe), bacillus of blue milk; an actively-motile bacillus, 1 to 4 μ long; the agar or gelatine acquires a grayish-blue tint; if added to non-sterilized milk a sky-blue colour is produced at ordinary temperatures, not at 37° C.; no colour is formed on blood serum.

Bacillus janthinus (Zopf), from sewage; a slender, motile bacillus, 2 μ in length; develops rapidly in milk, which acquires a violet colour without coagulation.

THE ORGANISM IS A BACILLUS.

THE GELATINE IS NOT LIQUEFIED.

THE ORGANISM IS CHROMOGENIC.

THE COLONIES ARE YELLOW.

Bacillus fluorescens non-liquefaciens, from water; slender, short rods; non-motile; forms a greenish-yellow growth; will not grow in the incubating oven.

Bacillus aurantiacus, from water; slender rods in pairs or threads; feebly motile; forms an orange pigment.

Bacillus brunneus (Adametz), from water; small, slender, irregular rods, forming gray colonies, which become brown.

Bacillus subflavus, from Chemnitz water; bacilli 1 to 3 μ long, with rounded ends.

Bacillus constrictus (Zimmerman), from water; motile bacilli, 1 to 6 μ in length, constricted at intervals, so as to form segments, in stained preparations each segment is separated by an unstained interval.

Bacillus aureus, from water, and from the skin in cases of eczema; slender bacilli, 1 to 4 μ long, lying parallel or in pairs or filaments; a motile bacillus; forms pale yellow colonies of very slow growth.

Bacillus fluorescens aureus from Chemnitz water; motile bacilli, 1 μ long, with long terminal flagella.

Bacillus flavescens (Pohl), from swamp-water; a motile bacillus, 2 to 3 μ long and 0·8 μ broad.

Bacillus spiniferus (Unna), from the skin in cases of eczema seborrhœicum; curved bacilli, 2 μ long, 0·8 μ broad; forms grayish yellow spiny colonies, with thin dentate margin.

Bacillus fuscus, from water; curved bacilli, varying in length, with irregular outline; forms a dark yellow pigment.

Bacillus of purpura hæmorrhagica (Tizzoni, Babès and Kolb), from the blood and various organs in cases of Purpura hæmorrhagica;

non-motile bacilli, 1·3 μ long, 0·2 broad, with rounded ends. Babès and Kolb describe the organism as an oval bacillus surrounded with a narrow capsule, and staining feebly by Gram.

Bacillus flavocoriaceus, from water; a very small bacillus, producing a sulphur-yellow pigment.

Bacillus striatus flavus, from nasal mucus; short, thick, curved rods, showing striated staining; produces a sulphur-yellow pigment; rare.

Bacillus canalis parvus, from sewer-water; non-motile bacilli, 2 to 5 μ long, with rounded ends; the ends of the rods stain more deeply than the central portion; will not stain by Gram.

THE ORGANISM IS A BACILLUS.

THERE IS NO GROWTH ON GELATINE AT 22° C.

Bacillus tuberculosis (Koch), from sputum and other secretions in cases of tubercle; rod-like bacilli, slightly curved, from 1 to 3 μ long; when stained they have a beaded appearance; is said to form oval spores (Schenk); stains well by Gram, also by Ziehl-Neelsen's carbol-fuchsin solution. Extremely difficult to cultivate directly from sputum on account of the numerous other organisms present; best obtained by secondary culture through inoculation; will grow on blood serum or glycerine agar at 37° C.; on serum the colonies appear in from ten to twenty-one days as minute dry white scales.

Bacillus mallei—bacillus of glanders (Löffler and Schütz), bacilli with round ends, straight or slightly curved, shorter and thicker than tubercle; stains best with methylene blue; is decolorized by acids and Gram solution; will grow on most media at 37° C.

Bacillus of diphtheria (Klebs-Löffler), from diphtheritic false membrane; straight or slightly curved non-motile rods with rounded ends, 2 to 3 μ in length; stains irregularly, the refractive portion of the rods staining most deeply; stains by Gram; is best grown on blood serum at 37° C.; the colonies appear in 24 hours as grey semi-translucent discs, thick in the centre, with a thin irregular border.

Bacillus septicus sputigenus (Diplococcus pneumoniæ), from pneumonic sputum and various purulent secretions; common even in healthy saliva; grows in various media at 37° C. (see Diplococcus pneumoniæ, p. 27).

Bacillus of influenza (Pfeiffer), from purulent bronchial secretion in epidemic influenza; has also been found in the blood in these cases (Canon); an extremely small, non-motile bacillus, resembling a diplococcus; sometimes in short chains; does not stain by Gram; is best grown on glycerine agar at 37° C.*

* Czenzynke's stain for the influenza bacillus in the blood: Concentrated aqueous solution of methylene blue, 40 grammes; ½ per cent. solution of eosin in 70 per cent. alcohol, 20 grammes; distilled water, 40 grammes. Cover glasses to be left in the stain from four to six hours at 37° C.

Bacillus necrophorus (Löffler), from rabbits which had been inoculated with condylomata; bacilli varying in length, often united in filaments; should be grown in neutral rabbit bouillon.

Bacillus conjunctivitis (Weeks), from the conjunctival sac; resembles the tubercle bacillus; grows best in flesh broth at 37° C.

Bacillus xerosis (Fränkel), from case of conjunctivitis; short non-motile bacilli; resembles bacillus of mouse septicæmia; grows on blood serum at 37° C.

Bacillus subtilis simulans, from human fæces; a bacillus with round ends, resembling Bacillus subtilis, but is non-liquefying and non-motile; grows on agar at 37° C.

Bacillus Lumnitzer, from bronchial secretion in putrid bronchitis; curved motile bacilli 1 to 2 μ long, with round ends; grows on agar or serum at 37° C.; cultures have a foul odour.

Bacillus of Demme, obtained by Demme from the skin and blood in cases of erythema nodosum; bacilli with round ends, from 2 to 2·5 μ long; stains by Gram; grows on agar at 37° C.; the colonies have a fringe-like margin.

Bacillus of Kitasato (Bacillus of bubonic plague), from the blood, etc., of those suffering from this disease; short rods with rounded ends surrounded by a capsule; stains irregularly, the ends staining deeply, leaving a clear interspace; does not stain by Gram; grows on blood serum at 34° C., forming yellowish-grey moist colonies.

Bacillus tachysporus (Westbrook, *Journal of Physiology*, vol. iv., 96), obtained from the inoculation wound in a case of tetanus; anærobic motile bacilli, varying in length and forming chains; characterized by the early appearance of oval spores, situated irregularly on the rods; appearing sixteen hours after inoculation; grows rapidly at 37° C. as small white colonies, forming a considerable quantity of fœtid gas; the spores may be stained by the Carbol fuchsin method, and the bacilli by methylene blue or gentian violet.

THE ORGANISM IS A BACILLUS.

HAS BEEN DESCRIBED, BUT HAS NOT BEEN GROWN.

Bacillus lepræ, from leprous tubercles; the bacillus resembles Bacillus tuberculosis, but is more generally curved; it stains in a similar manner, but appears to take the aniline colours more readily.

Bacillus of Lustgarten, found in secretion from syphilitic ulcers; straight or curved bacilli, resembling Bacillus tuberculosis, but differing in staining reaction; the bacilli are not free, but are contained in the interior of round, oval, or polygonal cells, one to eight in a cell. (See Lustgarten's method of staining.)*

Bacillus diphtheriæ vitulorum (Löffler), from calves suffering from a diphtheritic affection of the mouth; resembles Bacillus diphtheriæ; often forms filaments.

Bacillus buccalis maximus (Miller), from saliva; isolated bacilli, or filaments and bundles of filaments, lying parallel or crossing one another, 30 to 150 μ long; distinctly articulated, the rods being from 2 to 10 μ long, and 1 μ broad.

* Lustgarten's stain for the bacillus of syphilis: Place the cover-glass or section in Ehrlich's solution of gentian violet in aniline water, for 2 hours at 37° C.; wash in absolute alcohol; immerse in a 1½ per cent. solution of potassium permanganate for 10 seconds, and remove the precipitate of manganese dioxide which forms, by washing in an aqueous solution of sulphurous acid.

THE ORGANISM IS A SPIRILLUM.

Spirillum Obermeieri, from the blood in cases of relapsing fever; slender, motile, spiral filaments, 16 to 41 μ in length; thinner than spirillum choleræ; has not been cultivated.

Spirillum anserum, from the blood of geese suffering from septicæmia caused by this organism; long, flexible, spiral filaments in interlaced masses; has not been grown; actively motile.

Spirillum choleræ. See p. 30.

Spirillum of Finkler. See p. 30.

Spirillum tyrogenum. See p. 30.

Spirillum Metschnikovi. See p. 30.

Spirillum sputigenum (Miller), from the healthy mouth and margins of inflamed gums; small curved rods, actively motile, united in short spiral filaments; has not been grown.

Spirillum dentium (Miller), from the mouth; long, flexible, irregular filaments, 8 to 25 μ long; has not been cultivated.

Vibrio rugula (Müller), from dental tartar; rod-shaped cells, 6 to 8 μ long, and upwards of 2 μ broad; spores are developed at one extremity of the rod, causing it to enlarge.

Spirillum linguæ (Weibel), from the deposit on the tongue by inoculation through a mouse; curved rods resembling spirillum choleræ; stains by Gram.

Spirillum nasale (Weibel), from nasal mucus; curved rods with round ends, an aerobic organism growing very slowly on gelatine.

Spirillum α, β, γ **of Weibel,** from hay infusion.

Spirillum aureum, flavescens, and **flavum** (Weibel), from sewer-water.

Spirillum concentricum (Kitasato), from putrefying blood.

Spirillum of Miller, from carious teeth; straight or slightly-curved rods, frequently in pairs as well as spiral filaments; will grow on agar.

ORGANISMS NOT COMING UNDER ANY OF THE ABOVE HEADS.

Actinomyces, from pus, in cases of actinomycosis occurring in man and animals; a mycelial parasite composed of club-shaped elements, arranged in a rosette form; has been grown on agar at 36° C.; forms small, yellowish-white, prominent masses.

Plasmodium malariæ (Laveran), from blood in cases of malarial poisoning; round, oval, or concentric bodies, provided with flagella in the free state; freely motile, their form varies according to the stage of the disease, usually as amœboid, generally pigmented parasites in the red blood corpuscles; the blood should be examined when fresh.

SPORE-FORMING BACILLI.

Liquefy Gelatine.

Motile.

Bac. subtilis.
„ circulans.
„ mycoides.
„ mesentericus vulgatus.
„ „ fuscus.
„ „ ruber.
„ tumescens.
„ alvei.
„ butyricus.
„ liodermos.
„ ramosus.
„ megatherium.
„ inflatus.
„ gracilis.
„ lactis albus.
„ limosus.
„ vacuolosis.
Urobacillus Pasteuri.
„ Maddoxi.
„ Duclauxi.
„ Freudenreichi.

Non-motile.

Bac. anthracis.
„ brassicæ.
„ of Tricomi.
„ vermicularis.
„ aërophilus.
„ implexus.
„ filiformis.
„ granulosus.
„ scarlatinæ.

Do not liquefy Gelatine.

Motile.

Bac. of Koubasoff.
„ putrificus coli.
„ septicus vesicæ.
„ cyanogenus.
„ erythrosporus.

Non-motile.

Bac. acidi lactici.
„ subtilis simulans.
„ epidermidis.
„ coprogenes fœtidus.
„ brunneus.

Will not grow on Gelatine.

Bac. Lumnitzer.
„ ulna of Cohn.

Anaerobic Bacilli forming Spores.

Liquefying Gelatine.

Bac. tetani.
„ of symptomatic anthrax.
„ œdematis maligni.
„ spinosus.
„ butyricus of Botkin.
„ radiatus.
„ liquefaciens parvus.
„ tachysporus.

ORGANISMS FOUND IN THE AIR.

Micrococci.

Liquefying.	Non-liquefying.
Diplococ. roseus (Bumm).	Micrococ. ureæ (Pasteur).
,, citreus conglomeratus (Bumm).	,, cinnabareus (Flügge).
Micrococ. radiatus (Flügge).	,, flavus tardigradus (Flügge).
,, flavus desidens (Flügge).	Micrococ. versicolor (Flügge).
Micrococ. flavus liquefaciens (Flügge).	,, viticulosis (Katz).
Micrococ. tetragenus versatilis (Sternberg).	,, candicans (Flügge).
Staphylococ. pyogenes aureus (Rosenbach).	
Staphylococ. pyogenes citreus (Passett).	
Sarcina lutea (Schröter).	
,, rosea (Schröter).	
,, aurantiaca.	
,, alba.	
,, candida.	

Bacilli.

Liquefying.	Non-liquefying.
Bac. tumescens (Zopf).	Bac. multipediculus (Flügge).
,, subtilis (Ehrenberg).	Spirillum aureum (Weibel).
,, mesentericus fuscus (Flügge).	,, flavescens (Weibel).
Bac. mesentericus ruber (Globig).	,, flavum (Weibel).
,, inflatus (A. Koch).	
,, mesentericus vulgatus.	
,, prodigiosus.	
,, aërophilus (Libornius).	
,, pestifer (Frankland).	

BACTERIA FOUND IN WATER.

Micrococci.

Liquefying.

Micrococ. flavus liq.
,, ,, desidens.
,, radiatus.
,, agilis.
,, fuscus.
Diplococ. luteus.
Micrococ. cremoides.
,, aërogenes.
Sarcina candida.
,, lutea.
,, alba.
Staphylococ. pyogenes aureus.

Non-liquefying.

Micrococ. aurantiacus.
,, luteus.
,, violaceus.
,, cinnabareus.
,, flavus tardigradus.
,, versicolor.
,, cerasinus siccus.
,, citreus.
,, aquatilis.
,, fervidosus.
,, plumosus.
,, viticulosus.
,, carneus.
,, concentricus.
,, rosettaceus.
,, ureæ.

Bacilli.

Liquefying.

Motile.	*Non-motile.*
Bac. viscosus.	Bac. arborescens.
,, aquatilis.	,, nubilus.
,, liquidus.	,, vermicularis.
,, albus putidus.	,, cœruleus.
,, fluorescens liq.	,, glaucus.
,, ,, nivalis.	,, fulvus.
,, lividus.	,, plicatus.
,, rubidus.	,, implexus.
,, sulfureum.	,, punctatus.
,, violaceus.	,, radiatus aquatilis.
,, gasoformans.	
,, liquefaciens.	
,, phosphorescens indicus.	
,, ,, indigenus.	
,, cyano-phosphorescens.	
,, ramosus.	
,, subtilis.	
,, helvolus.	
,, ochraceus.	
,, devorans.	
,, gracilis.	
,, guttatus.	
,, vermiculosis.	
,, janthinus.	
,, mycoides.	
,, choleræ.	
,, coli.	

Proteus vulgaris and mirabilis.

Non-liquefying.

Motile.	*Non-motile.*
Bac. aurantiacus.	Bac. phosphorescens gelidus.
Bac. aureus.	Bac. smaragdino phosphorescens
,, stolonatus.	Bac. brunneus.
,, erythrosporus.	,, flavocoreacius.
Bac. aquatilis sulcatus.	Bac. fluorescens non-liquefac.
Bac. albus.	Bac. latericeus.
,, constrictus.	,, multipediculus.
Bac. fluorescens aureus.	Bac. fuscus.
Bac. fluorescens longus.	,, murisepticus.
Bac. fluorescens tenuis.	,, canalis capsulatus.
Bac. rubefaciens.	Bac. canalis parvus.
Bac. subflavus.	
,, typhosus.	
,, venenosus.	

ORGANISMS FOUND ON THE SURFACE OF THE BODY.

Micrococci.

Liquefying.	Non-liquefying.
Diplococc. citreus liquefaciens.	Diplococc. albicans tardus.
,, flavus liquefaciens tardus.	,, viridis flavescens.
Staphylococc. pyogenes albus.	Streptococc. pyogenes.
,, ,, aureus.	

Diplococc. of Demme (anaerobic).

Bacilli.

Liquefying.	Non-liquefying.
Bac. graveolens.	Bac. epidermidis.
,, fluorescens liquefaciens minutissimus.	,, aureus.
Bac. of Scheurlen.	,, ovatus minutissimus.
,, Havaniensis liquefaciens.	,, spiniferus.
	,, of Schimmelbusch.
	,, of Tommasoli.

ORGANISMS FOUND IN THE NOSE AND MOUTH.

Micrococci.

Liquefying.

Micrococ. albus liquefaciens.
Diplococ. fluorescens fœtidus.
Micrococ. fœtidus.
,, roseus.
Sarcina pulmonum.
,, lutea.
Staphylococ. pyogenes albus.
,, ,, aureus.

Non-liquefying.

Diplococ. coryzæ.
Micrococ. cumulatus tenuis.
,, candicans.
Streptococ. pyogenes.
Staphylococ. salivarius septicus.
Micrococ. tetragenus.
,, gingivæ pyogenes.
Streptococ. articulorum.
Micrococ. of Manfredi.

No Growth on Gelatine at Ordinary Temperature.

Micrococ. tetragenus subflavus.
Diplococ. pneumoniæ.

Bacilli.

Liquefying.

Motile.	*Non-motile.*
Bac. fœtidus ozænæ.	Bac. smaragdinus fœtidus.
Bac. mesentericus vulgatus.	Bac. of Miller.
Bac. termo of Vignal.	,, F of Vignal.
	,, B of Vignal.
	,, buccalis fortuitus.
	,, ,, minutus.
	,, ulna of Vignal.
	,, gingivæ pyogenes.
	,, pulpæ pyogenes.
	,, crassus sputigenus.

Non-liquefying.

Motile.	*Non-motile.*
Bacillus virescens.	Bac. striatus albus.
	,, ,, flavus.
	,, of Friedlander.
	,, of rhinoscleroma.
	,, subtilis simulans.
	,, fluorescens non-liquefaciens.
	Bac. of fowl cholera.
	,, dentalis viridans.

No Growth on Gelatine.

Bac. diphtheriæ.
,, tuberculosis.

Other Bacteria.

Vibrio nasalis.
,, of Podbielskij.
,, viridans.
,, rugula.
,, lingualis.
Iodococcus magnus.
Ascococcus buccalis.
Proteus Zenkeri.

ORGANISMS WHOSE GROWTH IS ACCOMPANIED BY A FOUL ODOUR.

Bac. tetani.
,, of Cazal.
,, smaragdinus fœtidus.
,, of Lesage.
,, fœtidus ozænæ.
,, of Lumnitzer.
,, of Tommasoli.
,, coprogenes fœtidus.
,, saprogenes.
,, septicus keratomalaciæ.
,, albus cadaveris.
,, alvei.
,, purpura hæmorrhagica of Tizzoni.
Bac. œdematis maligni.
,, of symptomatic anthrax.
,, fluorescens putidus.
,, allii.
,, cuticularis.
,, citreus cadaveris.
,, lactis erythrogenes.
,, prodigiosus.
,, termo of Vignal.
,, aquatilis sulcatus.
,, hyacinthi septicus.
,, graveolens.
,, ulna of Cohn.
,, ,, Vignal.
,, solidus of Vignal.
,, liquefaciens magnus and parvus.
Bac. spinosus.

Micrococ. fuscus.
,, ochroleucus.
,, fœtidus.
,, ureæ.
,, tetragenus mobilis ventriculi.
Spirillum of Finkler.
Proteus vulgaris.
,, of Karlinski.
,, mirabilis.
,, septicus.

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Baillière, Tindall and Cox, King William Street, Strand.